CSC3320 System Level Programming
Lab Assignment 6 - Part 2 - Post Lab

Due at 11:59 pm on Friday, Feb 26, 2021

Purpose: Learn the differences between writing a Bourne shell script and Java program. Learn how to use command argument in a Bourne Shell script. Learn how to compile and run Java and C programs in Unix terminal.

Part A:
Please complete the tasks in following table step by step and finish the questions below the table.

	Step
| ```
#!/bin/bash
#
#foo.sh in Part A of Lab 6 - Part 1
#

x=0 # initialization x = 0
i=1
while [ $i -le 3 ]  # while(i<=3)
do
s=`expr $i \* $i`   # s=i*i
x=`expr $s + $x`
i=`expr $i + 1`   # i=i+1
done

echo x=$x
``` | 1:<br><br>Go<br><br>to<br><br>your |

home directory (cd ~) and create a new file named as **foo.sh (vi foo.sh or nano foo.sh),** then

include following lines in your **foo.sh.**

Step 2: Save your file and exit editor.

Step 3: Try following command to make simple.sh executable.
$chmod a+x foo.sh
Step 4: Execute this file by invoking its name.

$./foo.sh

*Note: when typing the shell script in your terminal, please be very careful of the **spaces**.* 1

Questions:
1) Attach a screenshot of the output in step 4.

```
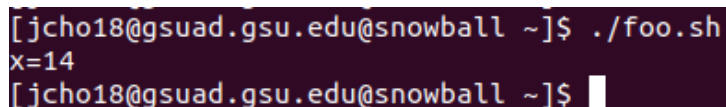[jcho18@gsuad.gsu.edu@snowball ~]$ ./foo.sh
x=14
[jcho18@gsuad.gsu.edu@snowball ~]$ 
```

2) Describe what does the shell script **foo.sh** do?

It runs a little mathematical loop until "i" is greater than or equal to 3.

Part B:
Step 1: Edit your **foo.sh** and change " **-le 3** " to " **-le $1** " .

Step 2: When finished, save the **foo.sh** and exit editor. Then try executing it again by typing following command.
$./foo.sh 5

Question:
Attach a screenshot of the output.

```
[jcho18@gsuad.gsu.edu@snowball ~]$ ./foo.sh 5
x=55
[jcho18@gsuad.gsu.edu@snowball ~]$ █
```

Part C:

Step 1: Edit your *foo.sh* in part B by making following modifications: • Add two
new lines below between line "**i=1**" and line "**while [$i -le $1]**" echo
```
please input a number
    read num
```
• Change " **-le $1** " to " **-le $num** " .

Step 2: When finished, save the *foo.sh* and exit editor. Then try executing it again by typing
following command and **type 5** as the input of the number.
$./foo.sh

Question:
Attach a screenshot of the output.
```
[jcho18@gsuad.gsu.edu@snowball ~]$ ./foo.sh
please input a number
5
x=55
[jcho18@gsuad.gsu.edu@snowball ~]$ █
```

Part D:

Write a Java program named **foo.java** to accomplish the same task as that in foo.sh of Part

A.

Note: If you want to run your Java program in terminal,
• to compile foo.java, please try
    $javac foo.java
• To execute it, please try
    $java foo

Question:

2

Then put the source code of **foo.java** in your answer sheet.

```java
public class test {
      public static void main(String args []) {
              int x=0;
              int sum=0;
              for (int i=1;i<=3;i++) {
                      int s=i*i;
                      int y=s+x;
                      sum+=y;
              }
              System.out.println(sum);
      }
}
```

Part E:

Create and run Kernighan and Ritchie's famous "hello,world" program. Step 1: Go to

your home directory (cd ~) and create a new file named as **hello.c (vi hello.c**

or nano hello.c), then include following lines in your **hello.c .**

```c
#include <stdio.h>

int main(void)
{
```

```
  printf("Hello,world\n");
  return 0;
}
```

Step 2: Save your file and exit editor.

Step 3: Compile and link the hello.c program by following command.
$cc hello.c

*Note: after this command, a default executable program named as "**a.out**" will be generated in current directory if there are no errors with your C program. You can use **ls** to check the existence of a.out .*
Step 4: Run the executable program ***a.out***

$./a.out

Questions:
1) Attach a screenshot of the output in step 4.

```
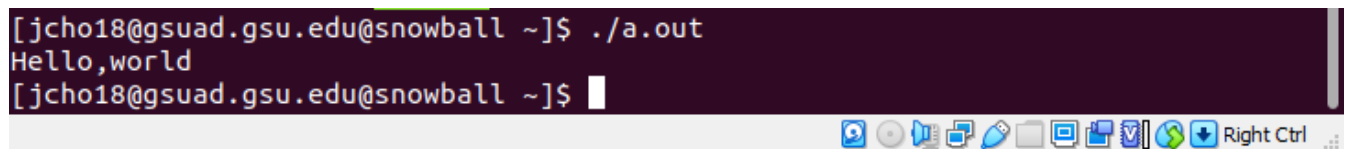[jcho18@gsuad.gsu.edu@snowball ~]$ ./a.out
Hello,world
[jcho18@gsuad.gsu.edu@snowball ~]$
```

2) Try following command to compile and link **hello.c** again. And tell what new file is generated after this command?
$cc -o hello hello.c
A hello file is made.
3) Try command below and attach a screenshot of the output.

$./hello

```
[jcho18@gsuad.gsu.edu@snowball ~]$ cc -o hello hello.c
[jcho18@gsuad.gsu.edu@snowball ~]$ ./hello
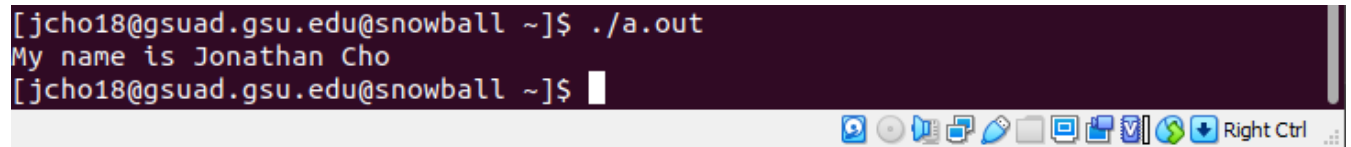Hello,world
[jcho18@gsuad.gsu.edu@snowball ~]$
```

4) Now write a new C program named as **myName.c** based on **hello.c**. In this program, print out your first name and last name instead of "Hello,world". For example, the output could be "My name is Yuan Long".

Execute your **myName.c** and attach a screenshot of the output. Then write the source code

of **myName.c** in your answer sheet and upload your file **myName.c** to classroom

:

```
[jcho18@gsuad.gsu.edu@snowball ~]$ ./a.out
My name is Jonathan Cho
[jcho18@gsuad.gsu.edu@snowball ~]$
```

```
#include <stdio.h>
int main(void)
{
printf("My name is Jonathan Cho\n");
return 0;
}
```

Submssion:

Note: Please follow the instructions below step by step, and then write a report by answering the questions and upload the report (named as Lab6_FirstNameLastName.pdf or Lab6_FirstNameLastName.doc) to Google Classroom, under the rubric Lab 6 Out-of-lab Assignment.

Please add the lab assignment NUMBER and your NAME at the top of your file sheet.